



Residential moving intentions at highway locations: The trade-off between nuisances and accessibility in the Netherlands



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ABSTRACT

This study investigates how highway nuisances are traded off against accessibility gains and other residential characteristics in the moving intentions of people living near highways. It studies a potential mediating role for residential satisfaction and potential mitigating relationships with highway nuisance perceptions. Structural Equation Modelling was used to test a proposed framework based on survey data collected from 1220 respondents living within 1000 m from a highway in the Netherlands.

The results show that higher levels of perceived highway nuisances are associated with increased intentions to move, mediated by lower residential satisfaction. However, better perceived accessibility was not associated with either lower moving intentions or lower highway nuisance perception. Highway usage/interest and other residential characteristics – such as satisfaction with buildings, traffic safety, and amount of greenery – seem to countervail perceived highway nuisances as they reduce moving intentions and reduce highway nuisance perception. Finally, the results show that some groups – for example home owners – were less inclined to move (direct effect), independently of their residential satisfaction.

From a practical perspective, a more inclusive perspective on highway planning, which accounts for accessibility and other residential characteristics as potential compensators and mitigators for highway nuisances, would be effective to reduce residential stress which could prevent protest and consequent cost overruns of projects.

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Introduction

The presence of highway infrastructure -inter-urban roads with at least two lanes in each direction- could impact residents negatively as well as positively. Negative highway externalities such as noise, air pollution or barrier-effects (i.e., visual and physical obstructions) can be perceived as highly undesirable and could in the most extreme cases even result in

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residential moving. Nevertheless, accessibility gains resulting from proximity to a highway access lane/on-ramp alongside other residential characteristics – such as neighbourhood aesthetics – could be highly valued: as such, they could at least partly countervail the stresses caused by highway annoyance.

Several studies touch upon the relevance of either nuisances (e.g., Osada et al., 1997; Lu, 1998; Nijland et al., 2007) or accessibility (e.g., Van Ommeren et al., 1999; Tillemma et al., 2010) in relation to residential preferences. As far as we know there is only one study however that has investigated the relative importance of highway nuisances and accessibility gains to residential satisfaction near highways together and to have confirmed the importance of accounting for these trade-offs (Hamersma et al., 2014). However, the consequences on moving intentions are still unknown.

This study extends this existing line of research and first of all aims to investigate to what extent highway nuisances, accessibility gains and other residential characteristics influence the intention to move. We study *moving intentions* instead of moving behaviour because we also wanted to include people who intend to move but who had not yet gone through with it. Research shows, for example, that the actual and perceived costs involved prevent some groups from moving (e.g., Lu, 1999). We also test the role of 'residential satisfaction' as potential mediator between nuisances, accessibility and other characteristics on the one hand, and moving intention on the other hand. Residential moving research indicates that residential satisfaction is a proxy for stress and consequent moving behaviour (Speare, 1974; Tillemma et al., 2012). In addition, the second research objective is to investigate potential direct relationships with highway nuisance perception; research provides indications that accessibility gains and other residential characteristics may also affect the perceiving of nuisances (e.g., Miedema and Vos, 1999). To this end, data have been collected at seven highway locations in the Netherlands, using a questionnaire devised in 2011. We applied Structural Equation Modelling, a technique which allows us to explain interrelationships among multiple variables (Hair et al., 2006).

From a policy perspective, this study specifically provides insights on the extent to which accessibility gains and other residential characteristics – such as neighbourhood aesthetics – could compensate for or mitigate (i.e., relieve) perceived highway nuisance. In addition, it provides insight into groups of people or types of areas, which may need a specific approach or additional attention (e.g., Tillemma et al., 2012), for instance because of greater nuisance perception or a reduced ability to move. These insights allow actions that could to a certain extent relieve locational stress and prevent protests (NIMBY-ism), undesired relocations and the time and cost overruns of projects caused by the need for unforeseen mitigation (e.g., Tillemma et al., 2012).

The outline of this article is as follows. The second section outlines the theoretical model and the third section describes the data and method. The results are discussed in the fourth section, followed by conclusions in the last section.

Theoretical framework

Highway nuisances, accessibility and residential moving intentions

Our first aim was to study the impact of highway nuisance against accessibility gains alongside other residential characteristics in residential moving intentions, accounting for a mediating role for residential satisfaction. First, we discuss the literature on the relationship between residential satisfaction and residential moving (see section "Residential moving intentions research: the role of residential satisfaction"). Second, literature pointing to the relevance of trade-offs between highway nuisances, accessibility gains and other residential characteristics is reviewed (see section "Combined research on nuisances and accessibility").

Residential moving intentions research: the role of residential satisfaction

Many studies emphasize the relevance of residential satisfaction as a proxy for residential coping behaviour in understanding why people move (e.g., Speare, 1974; Wong, 2002; Tillemma et al., 2012). Within this literature, residential dissatisfaction is often seen as a sign of stress (Speare, 1974) and residential moving as a way of relieving residential stress. Rossi (1955) describes the decision to move as a reaction to stress caused by a 'change in needs, aspirations or satisfaction' (Rossi, 1955, pp. 225–226). This stress could be caused by internal factors, such as lifecycle events, and external household factors, such as highway nuisances or a bad accessibility (e.g., Tillemma et al., 2012). In this conceptualization residential satisfaction can be regarded as a mediator between contextual factors and residential moving considerations (e.g., Speare, 1974), which is empirically confirmed by several studies (Speare, 1974; Wong, 2002; Lu, 1998).

Nevertheless, some studies have found that certain groups have higher or lower moving intentions despite residential satisfaction. Wong (2002) argues that a household's level of dissatisfaction is evaluated against its stress threshold: stress thresholds can differ by household based on the perceived costs of moving (e.g., Coulombel, 2011; Wong, 2002). Aspects such as home ownership, longer home tenure, increasing age, relatively low income, relatively low educational level and larger family size are frequently found to reduce moving intentions regardless of satisfaction (e.g., Deane, 1990; Landale and Guest, 1985; Lu, 1998; McHugh et al., 1990). Furthermore aspects such as proximity to friends and family (e.g., Landale and Guest, 1985), neighbourhood problems and environmental quality are sometimes found to have a direct impact (Lee et al., 1994; Osada et al., 1997; Lu, 1998).

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